PRELIMINARY OBSERVATIONS

ON A

NATURAL HISTORY COLLECTION

Made in connection with the Surveying Cruise of H. M. S. "Myrmidon," at Port Darwin and Cambridge Gulf—September to November, 1888—by W. Saville-Kent, F.L.S., F.Z.S., &c., Commissioner of Fisheries, Queensland.

I was invited last year by Captain the Hon. H. P. Foley Vereker, R.N., Dr. W. G. K. Barnes, and other officers of H.M.S. "Myrmidon," to accompany them on their surveying expedition to Cambridge Gulf on the northern sea board of West Australia, and of which district it had been determined to make a more accurate survey, in consequence of the growing importance of the township of Wyndham as a port of access to the Kimberley Goldfields. Apart from the prospects of an enjoyable trip in the most agreeable company, my alacrity in accepting the invitation was greatly stimulated in view of the opportunities that would be afforded me of obtaining natural history material from a comparatively new field, and at the same time of forming a more intimate personal acquaintance with tropical life than had previously fallen to my lot. My anticipations in each of these several directions were most agreeably fulfilled, and while sufficient leisure has not been at my disposal to permit of my presenting on this occasion a complete list of the specimens collected, I propose to place on record a brief enumeration of the more prominent among them, giving a special reference to certain of those forms which have apparently hitherto escaped observation, or have not been recorded in connection with an Australian habitat.

The period of my explorations in association with H.M.S. "Myrmidon" extended from September 9th, when I joined the

ship at Port Darwin, until November 14th, when I had to bid the vessel adieu and return to the northern colonies. On my journey to and from Port Darwin *via* Queensland coast, per the China Navigation Company's Steamer "Tsinan," such opportunities as presented themselves of adding to my collections and store of information were readily embraced, and the results accomplished may be appropriately chronicled in connection with the major portions of this report.

The materials amassed were naturally associated chiefly with the various sections of marine zoology, and in the accumulation and conservation of which I am greatly indebted to the able assistance of Dr. Barnes, who has moreover since remitted me a collection of specimens made by himself in the vicinity of Port Essington shortly after my departure. As opportunities occured a small collection of reptiles and also of bird skins was got together. Mr. Charles De Vis, M.A., the Curator of the Queensland Museum, has kindly undertaken the identification of these two sections, and has supplied the accompanying lists. With respect to the birds I may suitably mention here that Lieut. W. O Lyne, B.A., of H.M.S. "Myrmidon" was one of the most extensive contributors. Among the specimens that fell to his gun is a species of owl, which has proved to be an abnormally pale variety of the Blinking Owl, *Ninox connivens*. A somewhat rare form shot by myself among the mangroves in Cambridge Gulf is a female specimen of *Pachycephala lanoides*.

The reptiles, Mr De Vis informs me, include a species of snake differing in important structural details from those recorded in any accessible work on herpetology, and apparently new to science, this acquisition I leave to Mr. De Vis to describe.

Of the class of fishes over sixty species were collected; from Mr. Paul Folsche, P.M., and Dr. Wood the Government Medical Officer at Port Darwin, I received material assistance towards forming a collection of the fish of that district. The majority of these have been previously catalogued in Sir W. Macleay's

Fishes of Australia, and more notably in an account of a collection of fish received by him from Port Darwin, and described in the Proceedings of the Linnean Society of New South Wales for the year 1878. Some two or three of the smaller fish obtained in Cambridge Gulf would appear, however, to present characters that do not, so far as I have been able to ascertain, coincide with those of any previously described species. One of these is a small form of a Tassel Fish, *Polynemus*, conspicuous for the number and great length of those filamentous appendages developed from the base of the pectoral fins, which have gained for the genus its characteristic title. Among the six Australian species hitherto recorded, the number of pectoral appendages ranges from four to six, and in none of these do they extend in length beyond the base of the anal fin. In the form now introduced there are seven filamentous appendages developed from the base of each pectoral fin, five of which may extend backwards beyond the distal extremity of the caudal fin, and this last named fin is moreover of remarkable length, equalling, with the exception of the head, that of the entire body. The colours of this fish in life are essentially brilliant, the general ground tint of the body being yellow, shaded or sprinkled with black on the dorsal surface; the long caudal fin and the membranous portions of the pectoral and the nutral fins are bright orange, while the filamentous pectoral appendages are of an intense vermilion. Several species of the genus *Polynemus* having seven pectoral filaments have been recorded from the East Indian and Chinese Seas, and among these it most nearly resembles the Paradise Tassel Fish, *Polynemus paradiseus*, of the Ganges and the Indian coast line. In the brief description given of that species in Gunther's Catalogue of Fishes, Vol. II., p. 320, the ventral fins only are referred to as being coloured yellow in contra-distinction to those of allied species which are black. That species moreover would appear to be of considerable size, several of the preserved examples in the British Museum being referred to as "stuffed." The total length of the largest example of the form now introduced is only six inches, but it is in its mature

condition as evidenced by its body being distended with well developed ova. I propose to associate with this Cambridge Gulf species the title of *Polynemus Verekeri*, in recognition of my indebtedness to Captain Verker for the facilities afforded me for collecting the materials catalogued in this present paper. A technical diagnosis, together with a diagrammatic outline illustrating the most salient features of this species, are appended to this communication.

The second species of fish to which I have to direct attention is also remarkable for its East Indian affinities. It is a representative of the family Scopelidæ, and closely allied to the valuable commercial form commonly known in the East Indian and Chinese markets as the "Bummaloh," or "Bombay Duck." One of its most familiar uses in a gastronomic sense is that of a condiment to curries. The technical name of the Indian species is Harpodon nehereus, and so far as I am aware, or have been able to ascertain, no second representative of the same genus has been hitherto described. The species now introduced—and which I propose to name *Harpodon translucens*—is a fish of small size not exceeding four or five inches in length, and in life is remarkably transparent. One of its most characteristic features however, is the abnormal development of the teeth of the lower jaw; several of these at the symphysis lay entirely outside the oral cavity, and to the unassisted eye, present the aspect of curved projecting bristles. Examined with a lens, these projecting teeth are found to be minutely barbed like a fish-hook, and thus correspond in character with those occupying the normal position in the more familiar Indian type. In company with the *Polynemus* last described, this species of *Harpodon* was captured in Cambridge Gulf in some quantity, with the aid of a prawn trawl fastened overboard in the tideway, while the "Myrmidon" was at anchor. On being hauled on deck, the little fish clung so tenaciously to the meshes of the net with their finely barbed teeth, that it was difficult to detach them without injury. The technical diagnosis and an illustration of this species is associated with those of *Polynemus Verekeri*.

A third fish obtained in Cambridge Gulf, that I have reason to believe is new to science, is a species of *Amblyopus*. This genus includes several small fishes allied to the Gobies, but remarkable for the circumstance that the eyes are of such minute size and low organisation as to be practically functionless. In the example now under notice, it was not possible to detect the presence of these organs in the living fish, and it is only since it has become bleached in the preserving fluid that the eyes have been rendered visible, with the aid of a pocket-lens, as exceedingly minute specks. The colour of the living fish was a most delicate rose pink, with a longitudinal carmine streak, indicating the contour of the lateral line. Secondary streaks branched from the primary one on either side, and delineated the boundaries of the muscle-layers or myotomes. With reference to its characteristic colouring, I propose—in association with the accompanying diagnosis and illustration—to distinguish this fish by the title of *Amblyopus rubri-lineatus*. The nearest ally to this new species that has been hitherto recorded, would appear to be the *Amblyopus roseus*, described by Cuvier and Valenciennes, as occurring in sufficient quanties in the Bombay canal to form an article of food. That species, however, grows to the more considerable length of fifteen or eighteen inches, and differs in various structural details, including that of the fin formulæ and the comparative length of the head. The specimen here described was taken with the dredge at Cambridge Gulf, from a depth of about five fathoms A second example was likewise brought to the surface by the same method at Port Darwin, but unfortunately escaped into the water. The only other representative of the genus *Amblyopus*, hitherto recorded from Australian waters, is a species that was obtained from the Brisbane River, and described by Mr. De Vis in the Proceedings of the Linnean Society of New South Wales for the year 1884, under the title of *Amblyopus niger*. The colour of that fish, as it name implies, is an intense black.

In addition to the species of fish included in the subjoined list, I received information at Wyndham, Cambridge Gulf, of a

large fish, weighing several hundred weight, apparently an *Oligorus*, that was occasionally taken in nets at the mouths of neighbouring creeks I was unable to ascertain whether the species was identical with *Oligorus Mitchelli* Cast. of the West Australian sea-board, or represented one of the two Queensland types, *O terra-reginæ* and *O. goliath*, De V. It is possibly distinct from either of these. A species of so called Barramundi—probably the Giant Perch, *Lates calcarifer*, Bl.—was reported to me from the rivers and lagoons inland, from both Cambridge Gulf and Port Darwin. Specimens could not be obtained at the time for identification.

In connection with the invertebrate animals collected the class of the Mullusca claims the first attention. In this section I have obtained the able assistance of Mr. C. Hedley of the Queensland Museum, who has undertaken the identification of the majority of the shells collected and has supplied the accompanying list. There are not so far as I am aware many novelties among these Mollusca, though a certain portion of them may possibly prove of value in illustration of the local distribution of of previously known species. One of the forms, however, obtained at Cambridge Gulf, is of more than ordinary interest, and is apparently new to science. This is an exceedingly minute species of oyster I found growing in great abundance, not only on the stems, roots, respiratory shafts, or so called "cobbler's pegs" of the White Mangrove, *Aricennia officinalis*, but also, as shown in the examples here exhibited, so thickly encrusting the growing leaves of the same plant, that as many as fifty specimens may be counted on one leaf. The longest measurement of the finest examples does not exceed one quarter, or three eighths of an inch, while in the majority of instances it is considerably less. That the form is in its adult condition, and does not represent the undeveloped stage of some larger species, was demonstrated by the circumstance that numerous examples dissected and examined with the microscope were found to be full of well developed embryos. The habit of the species is moreover essentially

distinct from that of any other oyster growing in their vicinity. The one other species obtained from the same locality is apparently a local variety of the common Rock Oyster of the Australian coast line, and which is most generally referred to the *Ostrea glomerata* of Gould. This species, however, in Cambridge Gulf, and likewise at Port Darwin, is not accessible until the tide is well down, while the minute form now under notice is found only immediately below high water mark. The circumstance of its growing abundantly on the leaves of the mangrove indicates that this species is exposed to atmospheric influences for abnormally long periods. Examples of this diminutive species of oyster were given by me to Dr. J. C. Cox, of Sydney, to whom,—he being an authority on the innumerable varieties of this mollusk—I relegated the task of determining its specific identity, or of describing it if new. In his opinion it is altogether distinct from any form with which he was previously acquainted, and I am anticipating ere long his report upon it. Under no process of cultivation, I fear, will this remarkable oyster arrive at the standard size, two inches, permitting of its being placed on the public market.

Throughout my expedition I instinctively kept a keen look out for all edible forms of the genus *Ostrea*. As already mentioned, in the neighbourhoods of Port Darwin and Cambridge Gulf, a variety of what I regard to be *Ostrea glomerata*, or the common Rock Oyster of this and the neighbouring colony of New South Wales, was the predominating form. On my way up and down he Queensland coast, and abreast of the Great Barrier Reef moreover, I was constantly afforded by Captain Allison, of the China Navigation Co.'s s.s. "Tsinan," the opportunity of landing for an hour or so on one or two of the coral islands, including those of Cairncross and the Howick Group. Here my attention was attracted to a form of oyster that was very abundant in the dead coral blocks exposed at low water. As exemplified by the specimens exhibited, the distinctive external features of this form when retaining its most normal and unrestricted development,

are its elongate lunate or somewhat scaphoid or boat-shaped contour, the sharply defined and exceedingly even dentition of its convex or ventral border, and its peculiar opaque pinkish hue, which resembles that of many species of the marine calcareous algæ or nullipores. This species of oyster, as I have satisfied myself by subsequent investigation, is identical with the *Ostrea mordax* first described by Gould—Proc. Boston Soc. Nat. Hist. Vol. III., p. 346, 1850—and incorporated under the same title in Dr. J. C. Cox's enumeration of the Edible Oysters found on the Australian Coast. Proc. Lin. Soc. N. S. W. Vol. VII., p. 130, 1883. Had I met with this type in an isolated condition, I might have felt inclined at first sight to have regarded it, as do some more modern writers, as a locally modified variety of the cosmopolitan Australian edible species *Ostrea glomerata*. Scattered here and there, however, on the same coral rocks, was a large, comparatively broad, black shelled oyster, that would be referred without hesitation to that more familiar species. I collected an extensive series of specimens illustrating both of these two types, the pink shelled and black shelled varieties, for further examination and comparison, but regret to say that their brief exposure on deck for a short interval pending their perservation, proved too irresistible a temptation to some oyster connoisseur, and all but a few specimens disappeared. Among those saved is fortunately included one of the most interesting and instructive of the series. This as represented by the example here exhibited, illustrates a fully grown individual of the larger black-shelled variety, attached to the same fragment of coral rock that supports a group of the smaller pink shelled type. The very fact of these two exceedingly distinct oysters growing as it were shoulder to shoulder and under precisely identical conditions, is to my mind convincing evidence that they cannot be regarded as local varieties only of a single species, but that on the contrary they possess every qualification for independent specific recognition. This conclusion was arrived at by me at an early stage of their examination, and a more careful subsequent investigation with more materials at my disposal has further confirmed this

opinion. It has also assisted in the discovery of certain other characteristic points of distinction between the two forms which have apparently escaped the attention of previous writers. Referring to the two species as *Ostrea mordax* and *O. glomerata*—the former being represented by the usually narrower, more evenly dentated, pink-shelled type, and the latter by the more expanded, irregularly dentate, black-shelled species,—I find that *Ostrea mordax* is almost invariably attached to its support, and with relation to the contained living animal, by the right valve, the freely moveable or opercùlar valve being that of the left side. In *Ostrea glomerata*, on the contrary, the predominating form of attachment is by the left valve, the moveable or opercular valve being that of the right side. From another point of view, recognising the straight or more or less concave border of the oyster's shell as the dorsal, and the opposing or convex border as the ventral edge, it may be represented that the direction of curvature, as compared with the movements of the hands of a watch laid horizontally, has in *Ostrea mordax* a tendency to describe a right-winding, and in the case of *O. glomerata*, a left-winding spire. From a heap of the common market oyster, *O. glomerata*, it is possible to pick a few examples in which the attachment is by the right valve, the opercular shell being the left one; but these are quite the "exceptions to prove the rule," and as shown in the several bunches here exhibited, and taken hap-hazard from such heaps, the attachment is invariably by the left shell. Similar exceptions may occur also in the case of *O. mordax*, but the separate method of attachment described being predominant in either instance, this feature may certainly be accepted as an important accessory diagnostic distinction between the two species. It may be further observed of *Ostrea mordax* that adhesion is almost invariably effected throughout the entire surface of the attached right shell, a circumstance which renders it very difficult to detach these oysters from the rocks without breaking them, and militates against their extensive commercial utilisation. In the common Rock Oyster, *O. glomerata*, attachment is usually effected by the basal region or "butt"

only of the attached valve, and it is due to this circumstance that the clusters or bunches can be readily separated for the market. Yet a third feature—apparently hitherto unnoticed, which appears to me to afford a subsidiary point of distinction between the two species, is the circumstance that the adductor muscle, with its accompanying shell-impressions, is set much further back or towards the distal or growing edge of the shell in *O. mordax*, as compared with that of *O. glomerata*. In the last named species, it may be described as sub-central, while in *Ostrea mordax* its location more frequently intersects a line drawn transversely midway between the centre and the distal border. With reference to the distribution of *Ostrea mordax*, I may mention here that it occurs abundantly throughout the ocean coastline of eastern Queensland. Among the specimens now exhibited are some fine examples placed at my disposal by Mr. Hedley, and which were collected by him in the neighbourhoods of Southport and the Curumbin Heads, a few miles distance only from the New South Wales border.

Before leaving the subject of oysters, I may incidently mention here that the separate method of attachment that assists to distinguish *Ostrea mordax* from *O. glomerata* is an altogether unstable character in *Ostrea edulis*, and its varieties, as met with in the Southern Colonies. In this species as demonstrated by quantities artificially cultivated by me in Tasmania on slate and wood collectors, the mollusk attaches itself indifferently by either shell. A similar uncertainty as to the method of attachment obtains also in the diminutive species found growing on the leaves of the mangrove trees in Cambridge Gulf. Respecting the many other so-called species of Australian oysters, I am not in a position to say much at present. The entire nomenclature of the genus *Ostrea* has unfortunately got into great confusion owing to the lavish multiplication of species, on the basis, in many instances, of the most trivial local variations. The tendency of more modern writers has been to cut the Gordian knot, by lumping them altogether again as varieties only of a single species. A more careful and exhaustive investiga-

tion of the subject will, I am inclined to think, indicate the desirability of adopting a middle course, and lead to the establishment of several of the hitherto imperfectly defined species on a sounder basis, and around which a greater or less number of the sub-species or varieties may then be satisfactorily grouped. In order to arrive at this more desirable position, however, much careful work has to be accomplished, and especially with reference to the acquirement of a more perfect knowledge of the structural and developmental details of the living animals that secrete the shells, upon which alone their specific distinctions have hitherto been based. In so far as the opportunities will be afforded me of, in such manner, investigating the specific varieties indigenous to the Queensland Coast, I shall hope to communicate a further report to some future meeting of the Society.

The remaining Mollusca collected being of interest from a museum rather than an economic standpoint, I have asked Mr. Hedley, who is making this branch of zoology a special study, to record any observations of interest that may be attached to them. I may briefly mention here, however, that one great prize in the form of a Pearly Nautilus, *Nautilus pompilius*, with the living animal was narrowly missed. Early one morning on the return voyage from Cambridge Gulf to Port Darwin, some of the hands reported that a floating nautilus shell with what was graphically described as "something like a cauliflower sticking out of it," had just been passed. Captain Vereker immediately ordered the ship to be put about, boats were lowered, and a careful search was made along the wake just passed, but without any result, the nautilus having evidently taken alarm and descended again to its ocean bed.

Time has not yet permitted of my working sytematically through the collection of Crustacea. It includes, however, a large edible form of crab that excavates deep burrows in the mangrove swamps in Cambridge Gulf and the neighbourhood of Port Darwin, and is allied to, if not identical with, the Moreton Bay species, *Scylla serrata*. Many varieties of prawns were taken with the aid of

a small prawn trawl, and some interesting phosphorescent Ostracoda by the use of the towing net. These I propose to make the subject of a future communication. Of the worm tribe, class Annelida, a small collection was made including representatives of the two leading groups distinguished by the respective titles of the Dubicola and Errantia. Among the last-named section one equally interesting type, *Bonellia*, was taken in some abundance with the dredge in Cambridge Gulf.

The brief opportunity of landing on the Cairncross and Howick Islands in the Great Barrier system was utilised to collect several specific forms of the commercial varieties of the Bêche-de-mer, Trepangs, or Sea Cucumbers, as they are popularly called, and which belong to that section of the Echinodermata, including also the Sea-urchins and Starfishes, known technically as the Holothuroidea. The examples collected, so far as I have been able to identify them, would appear to represent the four species figured and described in Semper's work on this particuliar group, under the respective titles of *Holothuria atra*, *H. aculeata*, *H. scabra*, *and H. vatellus*. It afforded me much interest in studying the habits of these animals in their native coral reefs to find that their method of feeding, which has frequently been a subject of discussion, is essentially identical with that recorded by me of certain of the smaller English species, some years since, in the pages of "Nature." The operation is accomplished with the assistance of their proliferously capitate oral tentacles, and with which—while crawling over the submerged rocks, or quietly resting in the tide-left pools—they gather up every detachable organic substance and convey it to their mouth. First, one tentacle is swept mop-wise over the rock or ground within reach, and is then reflexed and thrust bodily into the oral cavity. Immediately one tentacle is withdrawn, another food-laden tentacle is reflected and ready to take its place, and in the same manner all of the, from ten to twenty, tentacles are kept actively work in supplying the commissariat. The substances found within the alimentary cavities of these Holothuriæ on dissection, consist chiefly of fragments of coral, molluscous shells, and sand. Also to a very

great extent of the microscopic calcareous shells of the Foraminifera, which occur in the living state in vast quantities on the reefs and in the rock basins inhabited by the Bêches-de-mer. These Foraminifera are thickly scattered over the surface of the various larger objects swallowed by the Holothuriæ, and evidently constitute their chief food. In the case of other Australian and English species belonging chiefly to the genera *Psolus* and *Cucumaria*, the tentacles have a more finely divided plumose structure, but the *modus operandi* of feeding is essentially identical. Specimens kept in aquaria have been observed by me creeping up the glass and sweeping off with their tentacles the microscopic organisms, Infusoria and Diatoms, that so speedily accumulate in such situations. In other instances I have observed them, while in an otherwise sedentary condition, continually thrusting out their tentacles into the surrounding water, and alternately retracting them, being evidently occupied at such times in capturing and feeding upon the Protozoa and other microscopic organic particles freely suspended in the water.

On the same reefs and in the same pools frequented by the Bêch-de-mer, a species of *Synapta* was very abundant. The animal has the organisation as a *Holothuria*, but is of a delicate pink colour and of glass-like transparency. The surface of the skin is also coated with minute anchor-shaped spicules, and by means of which it clings tenaciously to the fingers when handled. The tentacles are utilised as food purveyors in the same manner as those of the ordinary Bêche-de-mer, but are of a different pattern, being flattened and pinnately branched. Among the Echinodermata presenting features of interest, observed in the same locality, may be mentioned a large Brittle Starfish allied to *Ophiura scolopendrina*. This species abounded, its body being usually concealed under the rocks or coral blocks, while the attenuate spinous arms, sometimes as much as eighteen inches long, were thrust out in every direction apparently seeking for food. The contents of the stomachs of examples dissected were found to consist largely, as in the case of the Holothuriæ, of Foraminifera, mixed however with a very considerable proportion of finely comminuted algæ. Like many of the *Echini* or Sea Urchins, they are apparently to a

considerable extent vegetarians. The alimentative phenomena in the varied representatives of the Class Echinodermata are very dissimilar. In the closely allied family group of the Ophiuridæ or Snake-armed Starfishes, by way of example, they are totally distinct. Several species of this group were collected in the Barrier Reef and also at Port Darwin, one of these being remarkable for the brilliant emerald green tint of its snake-like arms. In an English species of the same group, *Ophiura texturata*, kept by me in an aquarium, the animals habitually lay buried in the sand. Immediately, however, that food in the form of minced fish or mussel was placed on the surface of the sand, they emerged from their hiding place, detecting the presence of the food apparently by a sense akin to smell, and throwing their arms around it drew it to their mouths, or more correctly dragged their bodies over and engulphed the food.

A considerable collection was made of representatives of the Class Cœlenterata, including Madrepores or stony corals, Gorgonias or Sea-fans, Sea Anemones, and Jelly-Fish; coloured drawings and notes of their living appearance being also recorded. The time and opportunity not having been yet at disposal to write out this somewhat extensive subject, further details are postponed for some future occasion. It is desirable however, that I should acknowledge here my indebtedness to the Hon. W. Langdon Parsons, Government Resident at Palmerston, Port Darwin, for special facilities in collecting the Cœlenterata of that district, he having placed the government steam launch at my disposal for dredging purposes while that of H.M.S "Myrmidon" was under repairs. Many valuable specimens were thus secured. The same remark made of the Cœlenterata must apply also to the class of the Protozoa including especially many rich gatherings of Forminifera. In an excursion made from Palmerston up the Darwin River I succeeded in obtaining a varied collection of the minute Protophytes known as Desmids, but which I have not the immediate facilities for identifying.

Apart from the general natural history collections now briefly summarised, some few objects were collected belonging to the

domain of anthropology, and certain of which are herewith exhibited. These include several spear-heads most ingeniously manufactured by the aborigines of the Kimberley Gold Field districts out of the glass bottles they find round the settlers' camps, and also a formidable tomahawk cleverly constructed from the segment of an iron horse-shoe. The ordinary stone axe and spear-head manufactured by the same aborigines is placed beside them. A pearl shell ornament worn by the female representatives of the same tribe is also shown. The aborigines in the neighbourhood of Cambridge Gulf were not at all approachable, their signal fires were constantly visible along the shore, and were evidently lit for the purpose of warning their neighbours of the ship's presence, but on no occasion did they appear within hailing distance. Respecting the signal fires it was a frequent subject of remark that notwithstanding a strong wind might be blowing, as evidenced by the drift of the smoke of adjacent bush conflagrations, the thin line of smoke from the special signal fires always ascended perpendicularly. Along the route to the Kimberley Gold Fields the aborigines have so far proved very treacherous and aggressive, though possibly not without primary provocation. They have been known in several instances to come to the settler's tents and receive food on one day, and return at daybreak the next morning and attack the camp. This has naturally led to reprisal and the existence of much ill feeling towards the aborigines on the part of the settlers. Unfortunately the dialect of the natives in these parts differs entirely from that of the tribes in North Queensland, and around Port Darwin, with whom amicable relations already obtain, and through whose medium the attempt has been made to establish friendly interviews. Tree sculpture is practised by the aborigines of Cambridge Gulf district, probably as in the case of the rock sculpture prevalent among other Australian races, as a means of intertribal communication or as a tribal record. Examples of such carvings embodying, so far as decipherable, rude representations of various animals, engraved on the back of a large Baobab or Bottle Tree, *Adansonia Gregorii* were secured with considerable labour by Captain Vereker, the tree being cut down and slabs including the carvings being carefully

removed. The engraved slabs were forwarded to the Melbourne Centennial Exhibition, and are I believe still in the custody of the Secretary to the permanent Exhibition Buildings. I may mention, in conclusion, that I am indebted for the several aboriginal weapons exhibited to the kindness of Dr. Laffin the Government Medical Officer, residing at Wyndham, during the time of our visit. The spear-heads, more particularly, had been brought in by a settler who had been attacked and speared in his camp, and had come down for treatment at the Wyndham Hospital.

— —

Diagnoses of New Species of Fish.

Polynemus Verekeri, s-k. Pl., fig. 1.

D 7, 1/13. A. 2/11. L. lat. 55.

Pectoral appendages seven in number, slender and thread-like, the three or five central ones extending to or beyond the distal extremity of the caudal fin ; the length of the head contained three times in the length of the body excluding the caudal fin ; caudal fin very long, deeply falcate, equalling in length the entire body ; pectoral fin equal in length to one and a half times that of the head ; a small spine developed above the angle of the pre-operculum. Colours in life ;—body, together with the dorsal, ventral, and anal fins, chrome yellow, the dorsal region including also the two dorsal fins slightly shaded and speckled with black ; the pectoral and caudal fins deep orange ; the pectoral appendages bright vermilion. Length of the largest specimen, a female with matured roe,, $6\frac{1}{2}$ inches. Habitat.—Cambridge Gulf, N. Australia.

Harpodon translucens, s-k. Pl. fig. 2.

D. 14. A. 15. V. 9.

The length of the head contained four and a half times in the total length, the caudal fin excluded ; snout very short : teeth slender, recurved, of uneven length, minutely uncinate, those of the lower jaw largest, a certain number of those at the symphysis

developed on the external surface of the mandible and projecting forwards ; caudal fin furcate, with a central lobe through which the lateral line is continued ; minute cycloid scales developed only in the posterior half of the body. Colour, in life, transparent, with minute black specklings along the dorsal surface ; the iris of the eye peacock blue. Length—three to four inches. Habitat.—Cambridge Gulf, N. Australia.

Amblyopus rubristriatus, S-K. Pl. fig. 3.

D. 6/44. A. 6/44. A. 1/42.

Head obtuse, contained nearly five times in the total length, the eyes exceedingly minute, situated on the top of the head ; caudal fin rhomboidal, pointed ; the dorsal fin originating immediately above the base of the pectorals ; scales minute, cycloid, imbedded in the skin. Colour in life—body rose pink, a carmine streak defining the contour of the lateral line, secondary streaks of the same tint branching from the primary streak and indicating the outlines of the myotomes, a carmine patch at the base of the pectoral fins, all the fins yellowish. Length—4 inches. Habitat.—Cambridge Gulf and Port Darwin, N. Australia.

Holacanthus darwiniensis. S-K.

Preopercular spine smooth, slightly grooved, reaching to the vertical from the hind margin of the operculum ; the dorsal and anal fins rounded posteriorly ; scales small. Colour in life—ground colour of the head and throat, and also the pectoral, ventral and caudal fins, and the base of the tail, bright yellow ; the remainder of the body and the dorsal and anal fins a deep purple black, traversed by numerous undulating and occasionally branching longitudinal bluish-white lines, about thirty such lines on the body and about nine such lines on the dorsal and anal fins respectively. A dark unstriated purple-black band extending vertically from the front of the head through and enclosing the eye, and continued slightly obliquely backwards to the chest ; a yellow band extending longitudinally along the dorsal surface of the body, encroaching

slightly on the dorsal fin, and connecting the yellow ground-colour of the head with that of the caudal region ; a vertically disposed elongate ovate area of opake white including the operculum, pre-opercular spine, and base of the pectoral fin. Length—8 inches. Habitat—Port Darwin.

The two previously recorded Australian species of the genus, *Holacanthus sexstriatus C. & V.* and *H. Duboulayi*, Gunth., belong to that section in which the bands or striations are vertically disposed.

List of Birds, Lizards, and Snakes collected at Cambridge Gulf, identified by Mr. C. De Vis, M.A.

Birds.

Pachycephala gutturalis—*Lath.*
,, fretorum, n.s.
Malurus amabilis—*Gld.*
Dicæum hirundinaceum—*Shaw.*
Strix novæ-hollandiæ—*Steph.*
Ninox connivens, pale var.—*Lath.*
Grallina picata—*Lath.*
Artamus leucopygialis—*Gld.*
,, melanops—*Gld.*
Merops ornatus—*Lath.*
Rhipidura albiscapa—*Gld.*
Halcyon pyrrhopygius—*Gld.*
Myzomela sanguinolenta—*Lath.*
Philemon buceroides—*Swain.*
Ptistes erythropterus—*Gmel.*
Erythrauchen humeralis—*Temm.*
Limosa uropygialis—*Temm.*
Himantopus leucocephalus—*Gld.*
Parra gallinacea—*Temm.*
Synoicus australis—*Lath.*
Nettapus pulchellus—*Gld.*

Lizards.

Varanus acanthurus—*Blgr.*
Heteronota derbiana—*Gr.*
Diporophora australis—*Steind.*
Lialis burtonii—*Gr.*
Ablepharus boutonii—*Desj.*—var. metallicus.

Snakes.

Onychocephalus unguirostris—*Pet.*
Cerberus australis—*Gr.*
Hydrophis, spp.
Gen. nov. Natricidæ.
Nardoa gilberti—*Gr.*

Descriptions of two New Vertebates in Mr. Saville-Kent's Collection.

Among the birds brought from Cambridge Gulf is a young female Pachycephala which is identical with an adult of the same sex previously procured at Kimberley on the Gulf of Carpentaria in company with two males. These which have hitherto been supposed to be *P. lanoides*, *Gld.*, must now be considered to constitute a distinct species. The writer proposes for it the name *P. fretorum*.

Adult male.—Above ash grey washed with olive green, but losing that tint on the rump; upper tail coverts dark-brown broadly margined with ash grey. All the head and face and ear coverts black: sides of neck and a narrow pectoral collar black, broadly margined with chestnut in continuity with a broad nuchal collar of the same. Wings brown: primaries narrowly, secondaries and coverts broadly edged with ash-grey: chin, throat, lower chest, abdomen, axillaries and under-wing coverts white: flanks grey: tail dark-brown, feathers margined laterally and apically with ash-grey; legs and feet light-horn brown: bill black.

The immature male wants the nuchal collar, has the pectoral black band broader, its chestnut margin narrower, the beak dark horn brown.

Adult female.—All above pale ashy brown ; ear coverts a darker and glossier brown ; a faint subocular line from the rictus, tail and thighs brown ; primaries narrowly, secondaries and coverts more broadly edged with ash grey ; chin and throat nearly white, chest and upper abdomen pale buff : all the feathers from the chin to the lower abdomen with a dark shaft streak—lower abdomen white : flanks grey—under tail-coverts buffy white : legs, feet and mandible horn brown.

P. *fretorum.*	Total.	Culmen.	Wing.	Tail.	Tarsus.
♂	165	17·5	96	76	24
♂	170	17:0	93	86	28
♀	172	19·0	92	79	26
P. *lanoides.*	190	25·0	95	83	25

It will be seen from these measurements that P. fretorum is inferior in size and different in proportions to P. lanoides. It is further distinguished by the pectoral bands of black and chestnut, and the chesnut collar occupying the whole neck on its upper surface. Habitat—Southern shores of Torres Straits.

NATRICIDÆ—Neospades,—g.n.

Habit stout, short, rounded : tail short, tapering, not distinct from trunk. Head flat, subelongate, gently tapering, moderately distinct from the neck, muzzle rounded ; an azygos prefrontal shield ; postfrontals moderate, vertical pentagonal. Two nasals, nostril between, lateral—one loreal—two pre—and two post—oculars ; labials in moderate number, scales keeled, anal divided, subcaudals two rowed ; teeth minute, irregular, last maxillary grooved ; eye moderate, pupil elliptical.

N. kentii.

Rostral broader than long, angular and separating the nasals caudad ; prefrontal a nearly equilateral triangle with the angles,

truncated, separating the nasals rostrad and in contact with rostral, post-frontals not longer than pre-frontal, Vertical nearly equilateral: occipitals large, each followed by a post-occipital: nasals moderate; loreal large, subtriangular, with the upper and lower edges rounded. Temporals three, the upper anterior the largest: upper labials eight, the sixth the largest, the fourth entering the orbit: scales in 21 rows, all the dorsals with a low and narrow keel not reaching the tips, ventrals 138.

Yellowish grey, the body and tail with 54 dark-brown dorsal bands with narrow interspaces, the bands giving off inosculating streaks, and blotches on the sides; under surface yellowish. the scutes narrowly dark edged, an indistinct dark mesian stripe, continuous upon the anterior portion of the body beneath.

One example.—Habitat, Cambridge Gulf, N W. Australia, dedicated to the collector, Mr. W. H. Saville-Kent.

List of Fish.—Those initialed (C.G.) obtained from Cambridge Gulf, the remainder collected in the Port Darwin district.

Lates calcarifer, *Bl.*; Serranus hexagonatus, *C. & V.*; T. guttatus, *Bl.*; Genyoroge notata, *C. & V.*; Mesoprion roseogaster, *Mel.*; M. Johnii, *Bl.*: Therapon *sp.*; Pristipoma hasta, *C.G.*; Pristipoma, *sp.*; Chelmo rostratus, *C. & V.*; C truncatus, *Knr.*; Chætodon aurofasciatus, *Mel.*; Scatophagus semi-striatus; Holocanthus darwiniensis, *n. sp.*; Drepane punctata, *C. & V.* Upeneus tragula, *Rch.*; Lethrinus cocosensis, *Blk.*; Sebastes, *sp.*; Pterois volitans, *L.*; Synancidium horridum, *L.*: Kurtus gulliveri, *East.*, *C.G.*; Polynemus Verekeri, *n. sp.*, *C.G.*; P. macrochir, *Gth.*, *C.G.*; Trichiurus savala, *C. & V.*, *C.G.*; Acanthurus annularis, *C. & V.*; Caranx nobilis, *Mel.*, *C. G.*; C. poolooso, *Rich.*, *C.G.*; Chorinemus lysan, *Torsk.*; Platax arthriticus, *Blk.*; Equula edentula, *Al.*, *C. G.*; Thynnus, *sp.*; Echeneis naucrates, *F.*, *C.G.*; Sillago gracilis, *A. M.*; Opisthognathus maculatus, *A. M.*; Antennarius uropthalmus, *Blk.*; Platycephalus japonicus, *C. & V.*;